

# Potential Impacts of Infectious Diseases to Populations of Pacific Herring in Puget Sound

***PK Hershberger***

*US Geological Survey*

***RM Kocan***

*University of Washington*

***NE Elder and JR Winton***

*US Geological Survey*

## **Abstract**

Several highly virulent, endemic pathogens are currently maintained in populations of Puget Sound herring. Among the metapopulation of herring in Puget Sound, incidence of the protistan parasite *Ichthyophonus* is age dependent, increasing from 12% among juveniles to 55% among under-represented, 6+yr cohorts. Among juvenile cohorts, viral hemorrhagic septicemia virus (Genotype I) is maintained in low prevalences, and nearly all individuals are infected with low levels of erythrocytic necrosis virus. Although the epidemiological course of infection is different for each pathogen, laboratory studies indicate that application of nominal stressors to wild herring can elicit overt diseases, resulting in decreased fitness and/or mortality. As a result, we contend that infectious disease should not be dismissed as a major constraint limiting age structure and survival of Pacific herring populations in the region.